(3.0018)

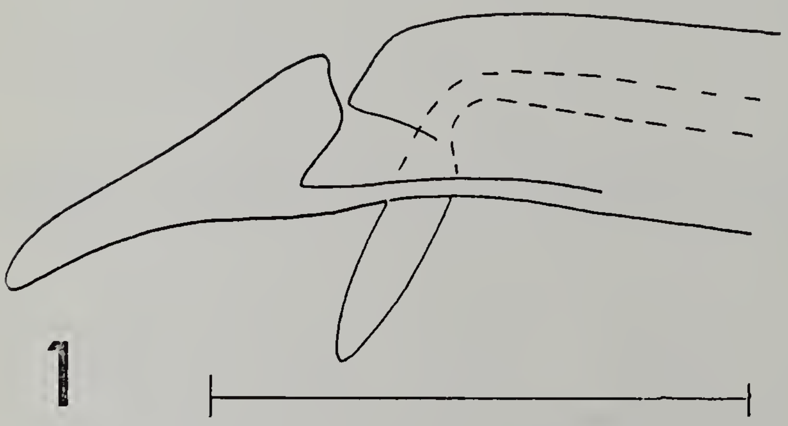
Isomira Mulsant in America North of Mexico (Coleoptera: Alleculidae): Species of Eastern North America Concluded

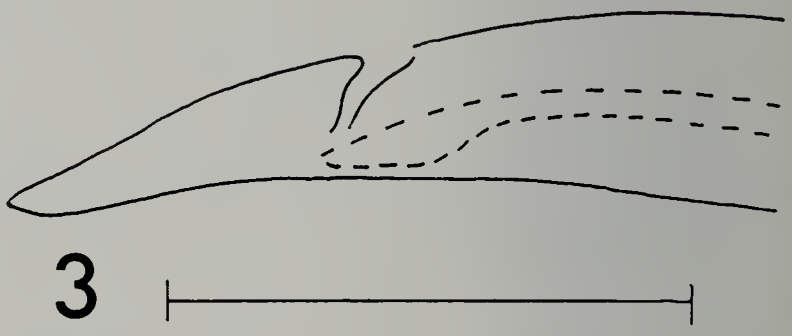
JAMES D. MARSHALL
BIOLOGY DEPARTMENT
THE COLLEGE OF IDAHO
CALDWELL, IDAHO 83605

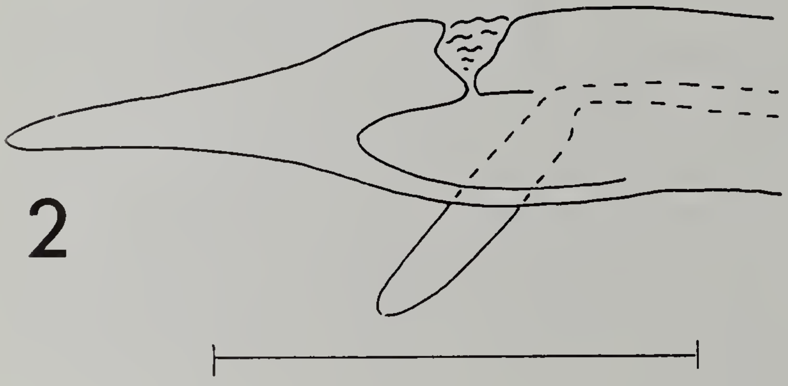
This is a part of my continuing revisionary series the scope of which is defined by the general foretitle, "*Isomira* Mulsant in America North of Mexico (Coleoptera, Alleculidae)." At the time of this writing three parts are in press and another is in preparation. The final part will be a concise synopsis containing short species summaries, tables, distribution maps, a fully illustrated key, and a definition of the genus.

The present contribution is concerned with redescriptions, taxonomic notes and distributional data for the *Isomira* species of eastern North America not treated in an earlier part (Marshall, 1970). For the purpose of making this paper as generally useful as possible, I have included a key to the species of eastern North America.

Terminology is in general accordance with that of Campbell (1966, 1968). Figs. 1-4 represent lateral views of the male genitalia; the entire apical piece


1


3


2

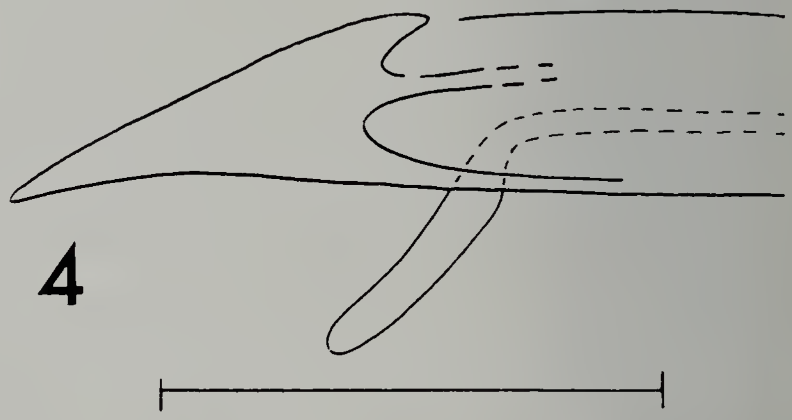

4

Fig. 1. Lateral view of male genitalia of *Isomira oblongula* Casey.
Fig. 2. Lateral view of male genitalia of *Isomira quadristriata* Couper.
Fig. 3. Lateral view of male genitalia of *Isomira ruficollis* Hamilton.
Fig. 4. Lateral view of male genitalia of *Isomira iowensis* Casey.

is shown, but only the distal portion of the basal piece is illustrated. Size of the eyes is expressed as the ocular index after Campbell and Marshall (1964). The label data of specimens examined are summarized for each locality and presented in the following order: locality; month; number of specimens. Seasonal distribution is given as earliest and latest dates on specimen labels.

Key to Eastern North American Species of *Isomira*

1. Third antennal segment two-thirds as long as fourth .... **oblongula** Casey
   Third antennal segment as long as fourth 2
2. Size moderately large, robust (over 8.5 mm. long), strongly convex in cross-section; Atlantic and Gulf Coast states and northward through midwestern states to Wabash Valley in southwest Indiana 3
   Size smaller, not robust (less than 8.5 mm. long); feebly or moderately convex in cross-section 5
3. Ocular Index less than 34 .... **valida** Schwarz, males
   Ocular Index greater than 34 4
4. Sides of elytra subparallel on basal two-thirds; angle formed at junction of inner and basal sides of terminal segment of maxillary palpi only slightly obtuse; inner side three-fourths as long as outer side; known only from Texas .... **texana** Casey
   Sides of elytra broadly rounded for entire length; angle formed at junction of inner and basal sides of terminal segment of maxillary palpi strongly obtuse; inner side one-half as long as outer side; Atlantic and Gulf Coast states northward through midwestern states to Wabash Valley in southwestern Indiana .... **valida** Schwarz, females
5. Ocular Index less than 44 .... **iowensis** Casey, males
   Ocular Index greater than 44 6
6. Ocular Index less than 55 7
   Ocular Index greater than 55 8
7. Eyes prominent; head narrowed suddenly at clypeus, sides of clypeus parallel throughout; color usually brown .... **iowensis** Casey, females
   Eyes not particularly prominent; clypeus tapering gradually to labrum; color usually yellowish .... **sericea** Say
8. Last segment of maxillary palpi slender, angle formed at junction of inner and basal sides obtuse, inner side one-half as long as outer side .... **pulla** Melsheimer
   Last segment of maxillary palpi robust, angle formed at junction of inner and basal sides about 90°, inner side and outer side equal in length, or with inner side slightly longer than outer side 9
9. Head and elytra shining black; pronotum ferruginous .... **ruficollis** Hamilton
   Color combination never as above .... **quadristriata** Couper

Isomira oblongula **Casey**

Isomira oblongula Casey 1891:51.—Blatchley 1910:1278.

Diagnosis.—This species is the only species of *Isomira* in which the third antennal segment is shorter than the fourth.

Description.—*General:* Oblongate, subparallel; integument shining, densely and minutely punctate throughout; pubescense pale, short, dense and appressed; color piceous brown throughout. *Head:* With terminal segment of maxillary palpi robust, in the general form of a right triangle, the angle formed at the junction of inner and basal sides only slightly obtuse; antennae filiform, slightly more than one-half length of body; third segment two-thirds as long as fourth, remaining segments long and slender, two times as long as greatest width; eyes large, ocular index: $\bar{x}$ (males) = 30.9 $\bar{x}$ (females) = 41.7. *Thorax:* Feebly impressed longitudinally on midline near base; one-and-three-fourths as wide as long, sides straight on basal two-thirds, becoming strongly arcuate to cephalic margin which is subtruncate and two-thirds as wide as the broadly and feebly sinuate caudal margin; basal foveae widely separated and distinctly impressed; basal angles right angles. *Elytra:* Slightly wider at base than pronotum; more than four times as long as pronotum and two times as long as their own greatest width; elytral striae very faintly impressed; intervals flattened basally, gradually and very feebly convex posteriorly, becoming clearly convex apically. *Abdomen:* Polished throughout. *Length:* 5.9 to 8.3 mm.

Male genitalia: Fig. 1.

Location of type: United States National Museum.

Type locality: Buffalo, New York.

Seasonal and Geographic Distribution: 50 male and 161 female specimens were examined; label data established a seasonal distribution from April 6 to July 19, and the following geographic distribution: CANADA: *Ontario:* Ottawa, no date, 1; Point Pelee, June, 10; Ridgeway, July, 1; Turkey Pt., June-July, 8. UNITED STATES: *Florida:* Torreya State Park, May, 2. *Illinois:* Mason Co., Mason State For., May, 2. *Michigan:* Whitmore Lake, June, 2. *New York:* Buffalo, no date, 1; Olcott, June-July, 61. *North Carolina:* Highlands, Wilson's Gap, May, 1. *Ohio:* E. Liverpool, no date, 1; Hocking Co., May, 1. *Pennsylvania:* Allegheny Co., no date, 1. Jeannette, May-June, 9. *South Carolina:* Clemson Coll., June, 1. *Texas:* Bastrop State Park, April, 10.

DISCUSSION.—Variation in this species is not great in most features. The specimens from Florida and Texas are, in general, darker than most northeastern ones, but occasional examples are taken in the northern part of the range that are as dark as the southern ones. The observed variation in the ocular index is 25.5 to 35.5 for males and 36.5 to 45.0 for females.

The robust right-angled form of the last segment of the maxillary palpi is similar to that found in *quadristriata* and *ruficollis,* but the large eyes of *oblongula* (ocular index of 45.0 or less), as opposed to the small eyes of the former two species (ocular index at least 54.0), will distinguish them.

***Isomira quadristriata* Couper**

Cistela quadristriata Couper 1865:62.

Isomira quadristriata, Leconte 1866:139.—Casey 1891:149.—Blatchley 1910:1278.—Papp 1956:148.

Isomira velutina Leconte 1866:139.

DIAGNOSIS.—The combination of the small eyes (ocular index 55 or more), the brown color, and the robust terminal segment of the maxillary palpi with the angle formed at the junction of the inner and basal sides almost 90° serves to separate this common eastern species from its relatives.

DESCRIPTION.—*General:* Body broadly oval in outline, moderately convex in cross-section; color brown throughout; integument shining; pubescence extremely short, dense, and recumbent. *Head:* Moderately and closely punctate; terminal segment of maxillary palpi elongate-robust, outer side curved from apical one-third to tip, angle formed at junction of inner and basal sides almost 90°; antennae about one-half length of body, third segment elongate and equal in length to fourth, remaining segments long and slender, two times as long as greatest width; eyes small, ocular index: $\bar{x}$ = 59.9. *Thorax:* Finely and densely punctate; one-and-three-fourths as wide as long, sides almost straight and feebly divergent on basal two-thirds, becoming more rounded and strongly convergent toward the cephalic margin, the latter truncate and two-thirds as wide as the caudal margin; caudal margin sinuate; basal angles slightly obtuse. *Elytra:* Plainly but sparsely punctate; slightly wider at base than caudal margin of pronotum; four times as long as pronotum and not quite twice (7:4) as long as their greatest width; discal striae, for the most part, not noticeably impressed, sutural striae strongly impressed posteriorly. *Abdomen:* Finely and sparsely punctate; polished throughout. *Length:* 5.5 to 7.8 mm.

Male genitalia: Fig. 2.

Location of type: *quadristriata,* presumably no longer in existence; neotype not designated; *velutina,* Museum of Comparative Zoology.

Type locality: *quadristriata,* "Quebec"; *velutina,* "New York."

Seasonal and Geographic Distribution: An examination of 318 males, 552 females, and 202 the sex of which was not determined established a seasonal distribution of April 29 to August 25 from the following localities: CANADA: *Manitoba:* Aweme, June-July, 3; Ninette, July, 2; 5 mi. SW Shilo, July, 1; Winnipeg, June, 1. *New Brunswick:* Province label only, 1; Bathurst, July, 1; Boiestown, July, 7; Tabusintac, Aug., 2. *Nova Scotia:* Annapolis Royal, July, 2; Kentville, July, 1; Petite Riviere, July, 1; Pictou, July, 1; Truro, July, 2. *Ontario:* Province label only, 10; Bancroft, July, 1; Bells Corners, July, 1; Bruce Lake, Aug., 1; Burk's Falls, July, 2; Campden, June, 2; Carleton Pl., July, 1; Chatterton, July, 4; Constance Bay, June, 1; Galetta, June, 1; Hastings, June, 1; Kearney, July, 3; Leamington, June, 3; Little Current, July, 1; Malachi, July, 2; Marmora, June, 4; Muskoka, July, 2; Noadicies, no date, 1; Normandale, June, 2; Orrville, June, 1; North Bay, July, 1; Orillia, June, 1; Ottawa, June, 2; Parry Sound, July, 1; Point Pelee, no date, 1; Port Credit, July 2; Prince Edward Co., June-July, 29; Ridgeway, June, 2; Scotia Jct., July, 1; Six Nations, Brant, Oct., 1; Sudbury, no date, 2; Timmins, no date, 1; Toronto, June-Aug., 3; Vineland, June, 2. *Quebec:* Province label only, 2; Aylmer, Quenn's Park, June, 14; Brome, May, 1; Covey Hill, June-July, 9; Duparquet, July, 32; Fort Colonge, July, 6; Knowlton, June-July, 25; Mt. Albert, July, 1; Megantic, July, 1; Montefort, Laurentian Mts., June, 1; Montreal, June, 1; Old Chelsea, July, 1; Parke Reserve, Aug., 1; Perkins' Mills, June, 3; Potton Springs, June-July, 2; St. Hilaire, June, 1; Wakefield, June-July, 4. UNITED STATES: *Connecticut:* Litchfield, June, 4; Short Beach, no date, 3; Stamford, June, 2. *Florida:* State label only, 2. *Georgia:* Cloudland Canyon State Park, May, 1. *Illinois:* State label only, 3; Apple River State Park, June, 1; Ogle Co., White Pines State Park, June, 1. *Maine:* State label only, 1; Cumberland Co., June, 3; Kineo, June, 1; Lincoln Co., June-Aug., 9; Linekin, Aug., 1; Machias, June, 1; Monmouth, June, 1; Mr. Katabdin, Camp Kennedy, Aug., 1; Orono, July, 3; Passadumkeag, July, 5; Southport, July, 1; Staceyville, Aug., 1. *Maryland:* State label only, 8; Jackson's Island, May, 1; Plummers Island, May, 1. *Massachusetts:* State label only, 17; Beach Bluff, July, 2; Boston, June-Aug., 5; Dorchester, May, 1; Hopkinton, May, 1; Humarock, June, 1; Marion, June, 1; Mt. Wachusett, no date, 1; W. Summit, N. Adams, July, 1; North Saugus, June, 6; Mt. Asnebumskit, Paxton, no date, 2; Petersham, June, 2; Salisbury Beach, June, 1; Saugus, June, 1; Stoughton, June-July, 2; Winchester, June, 1. *Michigan:* Cheyboygan Co., June, 2; Cheyboygan, July, 1; Detroit, June, 3; Douglas Lake, July, 3; Huron Mtn. Club, June, 1; Isle Royale, July, 5; Marquette, no date, 1; Yankee Springs Game Area, April, 1. *Minnesota:* State Label only, 2; Aitkin Co., June, 1; Becker Co., June, 2; Cass Co., no date, 1; Crookston, July, 1; Douglas Co., June, 1; Houston Co., June, 1; Itasca Park, no date, 1; Kittson Co., June, 1; Lake Itasca, June, 1; Lake Co., June, 2; Lake Minnetouka, June, 3; Laporte, June, 1; Minneapolis, June-July, 3; Otter Tail Co., no date, 2; Plummer, July, 3; Rush City, June, 1; Virginia, July, 1. *New Hampshire:* State label only, 4; Chocorua, no date, 1; Claremont, June, 1; Fredericton, July, 1; Jaffrey, no date, 1; Mt. Washington, July, 1. *New Jersey:* Boonton, July, 5; Cedar Pond, May, 1; East Side Clinton Reservoir, no date, 1; Duttonville, June, 1; Greenwood Lake, May-June, 1; Gt. Piece Meadow, May, 1; Guynard, June, 1; High Point, June, 1; Hopatcong, no date, 2; Lake Marcia, June, 6; Newfoundland, May, 13; Palsade, June, 1; Phillipsburg, June, 1; Ramsey, May, 1; Schooleys Mountain, June, 1. *New York:* State label only, 11; Alton, June, 5; Barnum Pond, June, 6; Buffalo, no date, 3; Cattaraugus Co., June, 3; Cinnamon, June, 1; Cortland Co., Chicago Bogs, June, 9; Elmira, June, 3; Essex Co., Artists' Brook, June, Heart Lake, June, Underwood, June, 63; Ft. Covington, June, 3; Ft. Montgomery, May, 1; Greene Co., no date, 5; Ithaca, May-July, 33; 7 mi. so. town of Long Lake, July, 1; McCollum, June, 1; Montauk Point, June, 1; Morristown, June, 1; Mt. Marcy, June, 3; Mt. McIntyre, June, 5; New York, no date, 1; Niagara Falls, June, 1; Olcott, 19; Oliverea, June-July, 3; Peru, June, 11; Petersburg, June, 2; Putnam Co., June, 9; Ramapo, May, 1; Redford, June, 11; Rochester, June, 1; Salem, June, 1; Upper Saranac, July, 12; Tompkins Co., Malloryville, June, McLean Bogs, June-July, 18; Ulster Co., Catskill Mts., July, Lake Mohawk, June, Slide Mtn., June, 14; W. Hebron, June, 6; West Point, May-June, 20; White Lake, July, 1; Whiteface Mt., June-July, 36; Whitehall, May-June, 4; Wilmington, June, 11. *North Carolina:* Balsam, June, 5; Black Mts., May-Aug., 104; Cherokee, May, 2; Doughton Pk., June, 6; Graybeard Mt., May-June, 47; Highlands, Whitesides Mtn., no date, 2; Mt. Mitchell, June, 4; Retreat, June, 2. *Ohio:* Clifton, May-June, 4; Geneva, no date, 1; Greene Co., May, 4; Hocking Co., May-June, 3. *Pennsylvania:* State label only, 6; Allegheny, no date, 1; Canadensis, June-July, 3; Cresson, July, 2; Crisp, July, 1; Dauphin, June, 1; Glenolden, June, 1; Hunter's Run, June, 1; Jeannette, June, 8; Monroe Co., July, 3; Montgomery Co., July, 1; Philadelphia, June, 2; Pittsburg, July, 3; Water Gap, no date, 1. *Rhode Island:* Watch Hill, June, 2. *Tennessee:* Great Smokey Mts., July, 2; Indian Gap, May-June, 2. *Virginia:* State label only, 1; Mt. Elliot, June, 46; Penington Gap, June-July, 2; Tazewell, June, 1. *West Virginia:* Cheat Mts., June, 1. *Wisconsin:* State label only, 20; Bayfield, no date, 14; Beaver Dam, no date, 1; Milwaukee Co., no date, 1; Polk Co., July, 1.

DISCUSSION.—The variation is considerable. Color varies from light brown to dark piceous brown. Usually the darker color is confined to the head (which in many cases is almost black) and the pronotum, but occasionally specimens are found in which the body is entirely of a very dark piceous color. Even more rarely the body is wholly light brown. The labrum and the clypeolabral junction are usually conspicuously lighter in color than the remainder of the head. The ocular index ranges from 55 to 65.

Isomira pulla Melsheimer also has an ocular index of over 55, and the larger examples of that species might be confused with *quadristriata.* The more slender terminal segment of the maxillary palpi of the former with the angle at the junction of the inner and basal sides obtuse is quite distinct from the right-angled condition of that segment in *quadristriata.* Another eastern species, *ruficollis* Hamilton, also has a comparable ocular index range, but is distinguished by the coloration as given in the key.

The male genitalia, in lateral view, have a pronounced dorsal swelling on the basal one-third of the apical piece, which is narrowed suddenly beyond the swelling and tapered to a point (Fig. 2).

Isomira ruficollis Hamilton

Isomira ruficollis Hamilton 1893:308.—Blatchley 1910:1277.

DIAGNOSIS.—This eastern species is readily recognized by the distinctive coloration; the elytra are shining black, prothorax ferruginous, the head shining black except for the labrum and clypeolabral junction which are also ferruginous but slightly darker in color than the prothorax. Only one other North American alleculid, *Isomira variabilis* Horn from California, has this coloration.

DESCRIPTION.—*General:* Body broadly oval in outline, moderately convex in cross-section; elytra black; prothorax ferruginous; head black, with labrum and clypeolabral junction dark ferruginous; integument punctate, shining throughout; pubescence moderately dense. *Head:* Moderately and closely punctate; pubescense short and appressed; terminal segment of maxillary palpi robust, outer side curved from apical one-third to tip, angle formed at junction of inner and basal sides slightly acute; antennae about one-half length of body, third segment subequal in length to that of fourth, segments five through seven long and slender, eight through eleven becoming shorter and stouter; eyes small, ocular index: $\bar{x} = 59.5$. *Thorax:* Moderately and closely punctate; one-and-one-half times as wide as long; sides almost straight and weakly divergent on basal two-thirds, becoming more rounded and strongly convergent toward cephalic margin; cephalic margin truncate, two-thirds as wide as the caudal margin; caudal margin feebly and broadly sinuate; basal angles slightly obtuse; pubescence short and appressed. *Elytra:* With punctation evident but sparse; bases slightly wider than pronotum; one-and-one-half times as long as their greatest width; discal striae not visibly impressed; sutural striae lightly impressed basally, becoming conspicuously impressed on apical one-third; pubescence moderately long and semi-erect. *Abdomen:* Finely and sparsely punctate; pubescence short, moderately dense and appressed; anterior sterna very dark, piceous brown, posterior ones lighter, fifth brown. *Length:* 5.8 to 7.8 mm.

Male genitalia: Fig. 3.

Location of type: Carnegie Museum.

Type locality: Near Allegheny, Pennsylvania.

Seasonal and Geographic Distribution: Study of 22 males and 80 females established a seasonal distribution of May 10 to June 20 from the following localities: UNITED STATES: *Kentucky:* Frankfort, June, 6. *Ohio:* Clifton, June, 3; Delaware Gap, May, 1; Greene Co., May-June, 19; Highland Co., June, 3; Hocking Co., May-June, 3; Sciota Co., June, 1. *Pennsylvania:* Allegheny Co., June, 16; Jeannette, May-June, 44; Pittsburg, no date, 6.

DISCUSSION.—Color variation in non-teneral adults is practically non-existent. In teneral specimens the normally shining black elytra are dark brown, but the characteristic reddish pronotum is present. The ocular indices of specimens measured varied from 56.0 to 63.0.

A unique morphological feature of *ruficollis* is the acute angle formed at the junction of the inner and basal sides of the last segment of the maxillary palpi.

***Isomira iowensis* Casey**

Isomira iowensis Casey 1891:145.

DIAGNOSIS.—The males of this species are readily distinguished by the combination of the large eyes (ocular index 44 or less), third and fourth antennal segments equal in length, and the small size (8 mm. or less).

The species that is most likely to be confused with this one is *sericea,* particularly the females. The yellowish color that is typical of *sericea* Say is usually sufficient to distinguish these species, but yellowish-brown specimens of *sericea* are frequently taken and are extremely difficult to distinguish from *iowensis* on the basis of color alone. The males are readily separable from both sexes of *sericea* by the larger eyes. A subtle but apparently constant character for separating the females of *iowensis* from *sericea* is the parallel-sided condition of the head in front of the eyes in the former and the slightly tapering form in the case of the latter species.

DESCRIPTION OF MALE.—*General:* Elongate-oval, somewhat convex, feebly shining, brown throughout; pubescence fine, short, and subrecumbent. *Head:* In dorsal view narrowed suddenly in front of eyes; clypeus parallel-sided to labrum; mandibles hidden from above; minutely and moderately punctate throughout; terminal segment of maxillary palpi in the general shape of an obtuse triangle; not quite one-half as wide as long, angle formed at junction of inner and basal sides very obtuse, the inner side only half as long as the outer side; antennae one-half as long as body, third segment as long as fourth; segments four through ten gradually expanded and rounded to apices on outer side, distal width of each of these segments slightly more than one-half of segment; eyes moderately large, ocular index: $\bar{x} = 40.8$. *Thorax:* One-and-one-third as wide as long; sides straight on basal two-thirds, becoming strongly rounded toward cephalic margin; cephalic margin feebly rounded, one-half as wide as caudal margin; basal foveae widely separated, barely discernible; basal angles right angles. *Elytra:* Slightly wider at base than pronotum; three-and-one-half times as long as pronotum and two times longer than their own greatest width; discal striae obsolete; sutural striae impressed and visible for most of their length, becoming more pronounced apically. *Abdomen:* Polished throughout, *Length:* 5.7 to 7.5 mm.

Male genitalia: Fig. 4.

DESCRIPTION OF FEMALE.—In most respects resembling male but differing as follows: (1) antennal segments four through ten elongate and slender, segments less rounded on outer side, not expanded distally, distinctly less than one-half as wide as long; (2) eyes smaller, ocular index: $\bar{x} = 47.2$.

Location of type: United States National Museum.

Type locality: "Iowa."

Seasonal and Geographic Distribution: An examination of 85 males and 86 females established a seasonal distribution of March 5 to June 23 from the following localities: CANADA: *Ontario:* Ridgeway, May, 1. UNITED STATES: *Arkansas:* top Mt. Magazine, May, 1. *Florida:* State label only, 3; Alachua Co., March, 1; Bellair, no date, 3; Branford, March, 1; Crescent City, no date, 1; Dunedin, April, 7; Gainseville, March, 35; Marion, March, 1; Oneco, March, 2; Waccasassa River, Gulf Hammock, March, 4. *Georgia:* Atlanta, April-May, 11; Blood Mtn., May, 1; Decatur, no date, 1; Dunwoody, no date, 13; Mount Berry, May, 1; Prattsburg, April, 1; Rabun Co., Pine Mtn., 1400', June, 1; St. Simon Isl., April-May, 1. *Illinois:* Jackson Co., Giant City State Park, May, 1; Pope Co., Bell Smith Springs, May, 1; Union Co., Pine Hills, May, 1. *Kansas:* State label only, 1; Douglas Co., no date, 1; Onaga, no date, 3; Topeka, no date, 1. *Maryland:* Plummers Island, April-May, 3. *Missouri:* Lake Wappapello, Poplar Bluff, May 6. *North Carolina:* Balsam, June, 5; Franklin, May, 1; Murphy, May, 1. *Ohio:* Ashland Co., May, 1; Delaware Co., April, 1; Greene Co., June, 1; Hocking Co., May, 10; Scioto Co., June, 2; Shawnee Forest, June, 1. *Pennsylvania:* Allegheny Co., no date, 10; Jeannette, May, 12; Pittsburg, June, 1. *South Carolina:* Clemson College, May, 1. *Tennessee:* Knoxville, April, 1; Loretto, May, 2. *Texas:* Bastrop, April, 1; Bastrop St. Pk., April, 5; Cherokee Co., May, 1; College Station, April-May, 2; 15 mi SW of Elkhart, April, 1; Smith Co., April, 3.

DISCUSSION.—The variation occurs mainly in color and eye size, with the color varying from a uniform light brown or tan to a dark, somewhat piceous brown. Often the pronotum is slightly darker than the remainder of the body. The ocular index varies from 37.0 to 43.5 in males and from 43.0 to 51.5 in females.

The moderately large eyes give *iowensis* a general habitus that is quite similar to that of *oblongula* Casey, but the latter species is readily distinguished by the third antennal segment being but two-thirds as long as the fourth. In *iowensis* these segments are equal.

ACKNOWLEDGEMENTS

Thanks are due: T. J. Spilman, United States National Museum, allowed the author access to the Casey material; E. C. Becker, Canadian National Collection, assisted generously in an unsuccessful attempt to locate the Couper type of *quadristriata*.

Literature Cited

Blatchley, W. S. 1910. An illustrated descriptive catalog of the Coleoptera or beetles (exclusive of the Rhynocophora) known to occur in Indiana. Indiana department of geology and natural resources bulletin 1. Indianapolis. pp. 1-1386.

Campbell, J. M. 1966. A revision of the genus *Lobopoda* (Coleoptera, Alleculidae) in North America and the West Indies. Illinois Biol. Monogr. no. 37. U. of Illinois Press. Urbana. pp. 1-203.

Campbell, J. M. 1968. A revision of the Mexican and Central American species of *Isomira* (Coleoptera, Alleculidae). Canadian Ent. Vol. 100. No. 5. pp. 449-469.

Campbell, J. M. and J. D. Marshall. 1964. The ocular index and its application to the taxonomy of the Alleculidae (Coleoptera). Coleopt. Bull. Vol. 18. No. 2. p. 42.

Casey, T. L. 1891. Coleopterological Notices III. Ann. New York Acad. Sci. Vol. 6. pp. 69-170.

Couper, W. 1865. Descriptions of new species of Canadian Coleoptera. Canadian Nat. 2nd. Series. Vol. II. pp. 27-76.

Hamilton, J. 1893. Descriptions of some species of Coleoptera occurring near Allegheny, heretofore undescribed. Canadian Ent. Vol. 25. pp. 305-310.

Leconte, J. L. 1863-1866. New Species of North American Coleoptera. pt. 1. Smiths. Misc. Coll. no. 167. pp. 1-86 (1863), 87-177 (1866).

Marshall, J. D. 1970. *Isomira* Mulsant in America north of Mexico (Coleoptera, Alleculidae): redescriptions, new synonymies, and taxonomic notes on eastern North American species. Ent. News (in press).

Papp, C. 1956. Notes on the genus *Isomira* and a new species from Arizona. Bull. S. California Acad. Sci. Vol. 55. pp. 145-149.

3.0018. Isomira Mulsant in America north of Mexico. (Coleoptera: Alleculidae): species of eastern North America concluded.

Abstract—As a part of a continuing revisionary series, four species of *Isomira* of eastern North America are redescribed with pertinent taxonomic notes and distributional data. This paper concludes the species of eastern North America so a key to species known to occur in that geographic area is provided.

Descriptors: Coleoptera; Alleculidae; *Isomira;* key; eastern U.S.A.